√BKK/LYK

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF HAWAII

---------- In the Matter of ----------	)	
	)	
PUBLIC UTILITIES COMMISSION	)	
	)	Docket No. 03-0371
Instituting a Proceeding to Investigate Distributed Generation in Hawaii.	)	
	)	
	)	

FILED
2006 OCT 10 A 11:47
PUBLIC UTILITIES COMMISSION

KAUAI ISLAND UTILITY COOPERATIVE'S SUPPLEMENTAL RESPONSE TO THE PUBLIC UTILITIES COMMISSION'S INFORMATION REQUESTS (PUC-IR-102)

AND

CERTIFICATE OF SERVICE

MORIHARA LAU & FONG LLP

Kent D. Morihara, Esq.
Michael H. Lau, Esq.
Davies Pacific Center
841 Bishop Street
Suite 400
Honolulu, Hawaii 96813
Telephone: (808) 526-2888

Attorneys for KAUAI ISLAND UTILITY COOPERATIVE

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF HAWAII

---------- In the Matter of ----------	)	
	)	
PUBLIC UTILITIES COMMISSION	)	
	)	Docket No. 03-0371
Instituting a Proceeding to Investigate Distributed Generation in Hawaii.	)	
	)	

KAUAI ISLAND UTILITY COOPERATIVE'S SUPPLEMENTAL RESPONSE TO THE PUBLIC UTILITIES COMMISSION'S INFORMATION REQUESTS (PUC-IR-102)

KAUAI ISLAND UTILITY COOPERATIVE, by and through its attorneys, Morihara Lau & Fong LLP, hereby submits its Supplemental Response to the Public Utilities Commission's Information Requests (PUC-IR-102) submitted on August 11, 2006.

DATED: Honolulu, Hawai`i, October 10, 2006.

KENT D. MORIHARA
MICHAEL H. LAU

Attorneys for KAUAI ISLAND UTILITY COOPERATIVE

KAUAI ISLAND UTILITY COOPERATIVE'S SUPPLEMENTAL RESPONSE TO THE PUBLIC UTILITIES COMMISSION'S INFORMATION REQUESTS (PUC-IR-102)

DOCKET NO. 03-0371

PUC-IR-102 **(KIUC, Interconnection)**

Reference: (1) Decision and Order No. 22248, filed on January 27, 2006 ("D&O No. 22248"), at Section 11(F), pages 31 — 33; and (2) KIUC's Interconnection Tariff.

Please explain KIUC's compliance with the specific requirements governing reliability and safety set forth in D&O No. 22248, Section 11(F), at pages 31 — 33.

SUPPLEMENTAL RESPONSE: **As a supplement to this response, please see Supplemental Attachment PUC-IR-102 for a revised chart indicating those sections in KIUC's proposed Interconnection Policies and Procedures and Interconnection Agreement that are intended to comply with the specific requirements imposed in Decision and Order No. 22248. Supplemental Attachment PUC-IR-102 corrects certain references contained in the chart previously submitted as Attachment PUC-IR-102. For reference purposes, Supplemental Attachment PUC-IR-102 contains both a clean version of the revised chart, together with a "blacklined" version showing the changes made to Attachment PUC-IR-102.**

SPONSOR: **M. Yamane**

SUPPLEMENTAL ATTACHMENT
PUC-IR-102
(CLEAN)

KAUAI ISLAND UTILITY COOPERATIVE
DISTRIBUTED GENERATION DOCKET
TARIFF REQUIREMENTS IMPOSED BY DECISION AND ORDER NO. 22248

GENERAL REQUIREMENTS

1. **Interconnection Policy Requirement**: Each utility is required to establish a non-discriminatory interconnection policy, by proposed tariff for approval by the PUC, that entitles distributed generation to interconnect when it can be done safely, reliably and economically. The interconnection policy should encompass the following seven areas: (1) interconnection requirements, (2) pre-interconnection studies, (3) distribution system upgrades required for integration, (4) responsibility for control and operation of distributed generation equipment, (5) indemnification and liability insurance, (6) communication with customers, and (7) dispute resolution. Decision and Order (D&O) 22248, Pages 35 and 46-47.
2. **Interconnection Agreement Requirement:** Each utility is also required to develop a standardized interconnection agreement, by proposed tariff for approval by the PUC, to streamline the distributed generation application review process and eliminate long lead times that may lead to cancellation of a beneficial project. D&O 22248, Pages 35, 46-47.

GENERAL POLICY/OBJECTIVES BEHIND ABOVE REQUIREMENTS

1. The policy of the PUC is to promote the development of a market structure that assures: (1) distributed generation is available at the lowest feasible cost, (2) distributed generation that is economical and reliable has an opportunity to come to fruition, and (3) distributed generation that is not cost-effective does not enter the system. D&O 22248, Pages 12 and 45.
   Technical interconnection requirements require a determination with respect to which distributed generation facilities should be eligible for interconnection and the standard terms and conditions for interconnection. D&O 22248 Page 34.
2. The complexity of a distributed generation unit's interconnection with the distribution system varies, depending upon (a) the type of technology, (b) the fuel source, either fossil or renewable, (c) the power system interface, (d) the extent of interaction required between the customer-generator and the utility, and (e) the architecture of the distribution system into which the distributed generation is interconnected. D&O 22248, Page 34.
3. Requiring each customer-generator to negotiate a complex interconnection agreement anew may create an unnecessary barrier to entry and may discourage the interconnection of small, cost-effective distributed generation projects. D&O 22248, Pages 34-35.

Specific Requirements	D&O 22248 Reference	Compliance Document and Site Reference	Comments
INTERCONNECTION:			
Goals/Objectives/Concerns:			
• The absence of clear interconnection requirements can produce unnecessary costs, in the form of inflexibility, long-lead times, lack of standardization and possible cancellation of a project beneficial to the customer-generator and the utility's customers.	Page 35		
Requirements:			
• As such, the PUC requires each utility to establish, by proposed tariff for approval by the PUC, requirements to set the parameters for standardized interconnection agreements.	Page 35	IA (Interconnection Agreement) Entire Document	
• The standardized interconnection agreements will outline (1) the obligations of the utility relative to customer notification and communication requirements, (2) time lines for completion, (3) allowances for pre-interconnection studies and charges, (4) provision for third party interconnection studies, and (5) disconnection and reconnection requirements.	Page 36	(1)IP(Interconnection Policy) 1.2 and 3.2 (2) IP Entire document (3) 1.2 IP (4) 1.2 IP (5) 3.4 IA	
• The standardized agreements should incorporate specific interconnection standards adopted by the Institute of Electrical and Electronic Engineers ("IEEE") or other recognized standard-setting groups and require the use of standard applications, provided by the customer-generator to the utility.	Page 36	2.1 IP reference attachment 3&4	

Specific Requirements	D&O 22248 Reference	Compliance Document and Site Reference	Comments
PRE-INTERCONNECTION STUDIES: Goals/Objectives/Concerns: • Interconnection of new generators to the distribution system affects system reliability. Therefore, customer-generators must coordinate generator additions with the distribution operator. The expense and time associated with these studies can make them a barrier to entry for the new customer-generator.	Page 36		
Requirements: • The PUC hereby requires each utility to perform pre-interconnection studies for customers at reasonable costs to the customer, and to set forth the terms and conditions of the same in a proposed tariff for approval by the PUC.	Page 36	3.3.2 IP refer attach.6 3.4.2 IP refer attach.7 3.5.3 IP refer attach.8	
• These requirements will require the utility to complete the study within a reasonable time, advise customers of its costs in advance, limit charges for redundant studies, provide the study results in writing, and provide similar features to facilitate customer interconnection.	Page 36	See above.	
• These requirements and parameters shall also: (1) allow qualified third parties to perform the studies, and require the utility to accept them under specific conditions, (2) allow third party verification of alternative solutions and technologies, (3) create safe-harbor exemption from the study requirements	Pages 36-37	3.3.1 IP 3.4.1 IP 3.5.4 IP	

Specific Requirements	D&O 22248 Reference	Compliance Document and Site Reference	Comments
for small projects whose interconnection is unlikely to affect the distribution system, and (4) pre-certify certain equipment that meets certain standards set by such organizations as the UL so as to expedite installation and obviate separately conducted equipment studies.		Refer to attach. 3&4	Attachment 3 & 4 list all applicable IEEE and UL standards for fast track process.
DISTRIBUTION SYSTEM UPGRADES REQUIRED FOR INTEGRATION: Goals/Objectives/Concerns: • In some cases, the entrance of a new generator will require the utility to upgrade the distribution system, or install equipment to maintain its safety and reliability. There is a possibility that the required protective equipment already exists with the new generating facilities. Disputes therefore may arise as to whether the utility is insisting on redundant equipment. Requirements: • Accordingly, the PUC requires the utility to: (1) accept certification of distributed generation equipment, which meets standards from qualified entities such as IEEE and UL, (2) train its personnel in new technologies relating to integration equipment, and (3) where new equipment is required to facilitate interconnection, propose an allocation of costs responsibility that recognizes both the costs	Page 37 Page 37	(1) 2.1 IP refer attach. 3&4. (2) N/A (3) See Attach.2 of IA	

Specific Requirements	D&O 22248 Reference	Compliance Document and Site Reference	Comments
caused by the generator and the system benefits, if any, derived from the new equipment. • Each utility may establish detailed terms and conditions for the foregoing requirements, by proposed tariff for approval by the PUC.	Pages 37-38		
RESPONSIBILITY FOR CONTROL AND OPERATION OF DISTRIBUTED GENERATION EQUIPMENT: Goals/Objectives/Concerns: • The benefits of distributed generation to the grid may increase if the utility can dispatch the customer's units or coordinate their operation with the utility's own units. On the other hand, customers may wish to maintain control of the generation to assure sufficient power resources for themselves. Requirements: • The PUC hereby requires the utility to use its best efforts to negotiate contracts that allow the utility to dispatch the customer's generation unit where dispatching the unit is economical and feasible, and coordinate their operation with the utility's own units.	Page 38 Page 38	This will be addressed in PPA.	Individual PPA will be submitted for PUC approval
INDEMNIFICATION AND LIABILITY INSURANCE: Goals/Objectives/Concerns:			

Specific Requirements	D&O 22248 Reference	Compliance Document and Site Reference	Comments
• .Generator create economic risks. Disputes may arise over whether customer-generators should have liability insurance, and in what amounts and forms it should be required. Allowing the utility to impose excessively high liability insurance requirements deters small distributed generation facilities.	Page 38		
Requirements:			
• .Accordingly, the PUC will not require distributed generators to carry a standardized amount of insurance, and hereby prohibits any utility from imposing a standardized insurance requirement for distributed generation projects.	Page 38	8.1 IA	
• The PUC allows each utility, however, to require that distributed generation customers disclose whether they intent to self-insure (and if so their means and capability of self-insuring) or if they intend to obtain an insurance policy (and, of so, in what forms and amounts), as part of the interconnection application process with the utility.	Pages 38-39	8.1 IA	
Note: By this Decision and Order, the PUC does not intend to eliminate the obligation for distributed generators to carry some form of adequate insurance, as the PUC expects distributed generation customers to have insurance in forms and amounts that are commercial reasonable in each particular situation. This approach allows a customer-generator more flexibility in providing for adequate risk management of the project	Page 39		

Specific Requirements	D&O 22248 Reference	Compliance Document and Site Reference	Comments
without the burdensome and potentially overly costly standardized insurance requirements.			
UTILITY COMMUNICATION WITH CUSTOMER-GENERATORS: Goals/Objectives/Concerns: • Prospective customer-generators should not have to contend with long delays in processing their applications, confusion over which persons within the utility are responsible for which matters, and unfamiliarity within the utility over the engineering and economics of distributed generation projects. Prospective customer-generators are also entitled to have their confidential information protected. Requirements: • .Therefore, the PUC requires each utility to (a) establish a centralized point of contact for distributed generation applications, (b) train certain utility employees in distributed generation matters as appropriate, and (c) maintain the confidentiality of information the customer-generator deems confidential, unless the PUC determines that disclosure is necessary to protect the public or as otherwise determine by the PUC.	Page 39 Pages 39-40	(a) See Attach.2 of IP (b) N/A (c) 4.4 IP	

Specific Requirements	D&O 22248 Reference	Compliance Document and Site Reference	Comments
-----OTHER TARIFF REQUIREMENTS/ISSUES----			
RELIABILITY AND SAFETY: Goals/Objectives/Concerns: • An issue in this docket is whether distributed generation can be implemented in a manner that does not reduce the reliability or safety of the electric distribution system. Distributed generation differs from conventional generation because generators enter the arena without being planned or controlled automatically, by the local utility. • Despite numerous generators connected to, and injecting power into, the utility system, that system must be in balance at all times. Specifically, (a) generation and demand must be equal, (b) sufficient generation must be available to provide voltage support on the lines, (c) sufficient capacity must exist on the distribution lines to more electricity, and (d) there must be surplus generation, transmission and distribution capacity available and ready to respond to sudden changes in demand. A new load, a new generation source, or a loss of either can cause system imbalance, with results ranging from damaged computer equipment to large-scale blackouts. Prevention requires coordination between distributed generators and the utility.	Page 30 Pages 30-31		

Specific Requirements	D&O 22248 Reference	Compliance Document and Site Reference	Comments
Requirements: • .To assure safety and reliability, the PUC therefore will require the utilities to establish requirements that: (a) require, provide, and charge for all services necessary to maintain adequacy, security and stability of the distribution system, and (b) require all necessary safety equipment and operational procedures as a condition for connecting distributed generation to the system.	Page 30	(a) 3.4 attach. 5 IA (b) 3.4 Attach. 5 IA	
• The PUC, therefore, requires that each utility establish reliability and safety requirements, by proposed tariff for approval by the PUC, for distributed generation that is connected to the electric utility's distribution system. These requirements should (a) establish operating standards for voltage, power factors, frequency, and harmonic distortion, (b) require certain procedures and equipment to allow for the transfer of electric power between the system and the facility and allow parallel operation to occur. In such situations, certain limitations should apply: (1) the distributed generation unit should be required to maintain a consistent degree of power flow, stable VAR (or volt amperes reactive) supply and voltage support, (2) the distributed generation unit must be able to synchronize with the electric power system, within an acceptable degree, (3) upon disconnection from the power system, the	Pages 31-32, 46	See 2.2.1 of IA also Attach. 5 of IA. Also 1.8 of IA for VAR flow requirement. 3.4 of IA	Voltage, Power Factor, Frequency and other specific reliability issues including mode of operation will be addressed in a case by case basis on Attach 5 of the IA Disconnection issues address in

Specific Requirements	D&O 22248 Reference	Compliance Document and Site Reference	Comments
distributed generation unit should be prohibited from reconnecting to the power system and re-commencing operation until the utility has verified that the unit can reestablish full voltage and power support to the distribution system and operate in a stable manner for a specific time period to be established by the utility.			Interconnection Agreement.
• Further, the guidelines should establish control and monitoring requirements for the distributed generation unit to coordinate the operations with the utility, as well as: (1) allow for automatic control and quick shutdown, (2) meet metering, telemetry and communications requirements capable to supplying failure reporting data on generation operation, and (3) meet minimum documentation and test result criteria.	Page 32	(1,2 &3) 1.7 IA	
• In addition, the interconnection of distributed generation should not result in an unacceptable increase in the risk of electrocution or fire. The PUC hereby requires that each utility establish technical requirements, by proposed tariff for approval by the PUC, to ensure distribution system safety that: (a) require any distributed generation unit to have a positive disconnect that automatically isolates it from the distribution system when there is a fault, (b) require that when there is a fault, the distributed generation unit may not reconnect to the distribution	Pages 32-33	1.5.4 and 1.5.5 of IA	

Specific Requirements	D&O 22248 Reference	Compliance Document and Site Reference	Comments
system until the fault is cleared, (c) require all interconnected distributed generation to have a utility-accessible manual disconnect switch, (d) require all distributed generators to comply with national, state, and local standards and electrical codes and safety practices, (e) require the generator to follow the utility's safety procedures for ensuring that switching devices do not operate unless and until appropriate preconditions are met and verified, and (f) require the distributed generation unit to have protective devices such as over current protection, circuits with reclosing schemes, inverters, synchronizing schemes and islanding abilities.			
COST ALLOCATION AND RATE DESIGN: Goals/Objectives/Concerns: • To build and operate a distributed generation project, costs must be incurred by both the customer-generator and the utility. The customer-generator will incur the up-front capital costs for construction and installation, as well as ongoing operating costs such as fuel and maintenance. The utility have to incur costs to accommodate the customer-generator. The utility-incurred costs include: (a) costs to complete interconnection and pre-interconnection studies, (b) costs incurred to acquire and operate generation, transmission, or distribution facilities	Page 40		

Specific Requirements	D&O 22248 Reference	Compliance Document and Site Reference	Comments
necessary to provide electric service to the customer-generator (i.e., distribution system costs), (c) costs of utility system facilities, built on the expectation that the customer's load will be there, which would be rendered unrecoverable if the customer-generator reduces its purchases in favor of the customers' own generation (i.e., unrecovered costs).			
• Requirements:			
• To ensure that only economic distributed generation projects are developed, and that there is no cost shifting from the customer-generator to other customers or to utility shareholders, the PUC finds that utility-incurred costs must be allocated properly so that those costs that benefit the distributed generation project are borne by the project.	Pages 40, 47		
• This principle applies to interconnection costs, standby and backup service costs, and unrecovered utility costs. In that connection, the following requirements are imposed:	Pages 41, 47		
1. Interconnection Costs: The PUC requires that each utility require the interconnecting carrier to pay for all costs of interconnecting, including the costs of system upgrades or network upgrades; however, if the interconnecting customer or generator can show that there are benefits to the utility system for such upgrades, it may apply to	Page 41	4.1 IA Attach. 6 of IA	

Specific Requirements	D&O 22248 Reference	Compliance Document and Site Reference	Comments
the utility for a credit reflecting these benefits, subject to PUC approval. 2. Standby and Backup Service Costs: The PUC requires each utility to establish, by proposed tariff for PUC approval, standby rates based on unbundled costs associated with providing such service (i.e., generation, distribution, transmission and ancillary services). The unbundled rates should represent, identify, and quantify the costs of providing standby services to distributed generation customers, with the costs based on each utility's latest recorded results for the most recently completed fiscal year, or other means acceptable to the PUC. 3. "Unrecovered" Costs. • The PUC finds that standby fees must be set at a level allowing the utility to recover the costs incurred by the electric utility that are reasonably apportioned to the customer-generator. A carefully constructed standby charge will prevent uneconomic bypass, because an economically rational customer will not make the investment unless the sum of the investment, the operating costs, and the standby charge are exceeded by the savings on the customer's bill resulting from the investment (plus any revenues the customer	Page 42 Page 43		Note: To be addressed in KIUC's forthcoming standby service tariff (proposed).

Specific Requirements	D&O 22248 Reference	Compliance Document and Site Reference	Comments
might earn from permissible sales back to the grid). • As part of the PUC's review and approval of the standby rates, the PUC will also consider whether there is a benefit to deferring the assignment of any unrecovered costs until a certain percentage of load has been lost to distributed generation applications. In doing so, the PUC will encourage deployment of beneficial and economic distributed generation while providing protection to the utility. Once the percentage is reached, the PUC can appropriately allocate the charges for unrecovered costs to those whose new generation rendered these costs unrecoverable. Note: To the extent that the net metering provision HRS §269-102(b) applies, any requirements established or approved by the PUC with respect to interconnection charges, standby rates and charges shall not apply to net-metering facilities pursuant to HRS §269-102(b).	Pages 43-44		

SUPPLEMENTAL ATTACHMENT
PUC-IR-102
(BLACKLINED)

Deleted: ¶

Deleted: ¶

KAUAI ISLAND UTILITY COOPERATIVE
DISTRIBUTED GENERATION DOCKET
TARIFF REQUIREMENTS IMPOSED BY DECISION AND ORDER NO. 22248

GENERAL REQUIREMENTS

1. **Interconnection Policy Requirement**: Each utility is required to establish a non-discriminatory interconnection policy, by proposed tariff for approval by the PUC, that entitles distributed generation to interconnect when it can be done safely, reliably and economically. The interconnection policy should encompass the following seven areas: (1) interconnection requirements, (2) pre-interconnection studies, (3) distribution system upgrades required for integration, (4) responsibility for control and operation of distributed generation equipment, (5) indemnification and liability insurance, (6) communication with customers, and (7) dispute resolution. Decision and Order (D&O) 22248, Pages 35 and 46-47.
2. **Interconnection Agreement Requirement:** Each utility is also required to develop a standardized interconnection agreement, by proposed tariff for approval by the PUC, to streamline the distributed generation application review process and eliminate long lead times that may lead to cancellation of a beneficial project. D&O 22248, Pages 35, 46-47.

GENERAL POLICY/OBJECTIVES BEHIND ABOVE REQUIREMENTS

1. The policy of the PUC is to promote the development of a market structure that assures: (1) distributed generation is available at the lowest feasible cost, (2) distributed generation that is economical and reliable has an opportunity to come to fruition, and (3) distributed generation that is not cost-effective does not enter the system. D&O 22248, Pages 12 and 45.
   Technical interconnection requirements require a determination with respect to which distributed generation facilities should be eligible for interconnection and the standard terms and conditions for interconnection. D&O 22248 Page 34.
2. The complexity of a distributed generation unit's interconnection with the distribution system varies, depending upon (a) the type of technology, (b) the fuel source, either fossil or renewable, (c) the power system interface, (d) the extent of interaction required between the customer-generator and the utility, and (e) the architecture of the distribution system into which the distributed generation is interconnected. D&O 22248, Page 34.
3. Requiring each customer-generator to negotiate a complex interconnection agreement anew may create an unnecessary barrier to entry and may discourage the interconnection of small, cost-effective distributed generation projects. D&O 22248, Pages 34-35.

Formatted: Tabs: 6.13", Left + Not at 7.25"

Specific Requirements	D&O 22248 Reference	Compliance Document and Site Reference	Comments
INTERCONNECTION: Goals/Objectives/Concerns: • The absence of clear interconnection requirements can produce unnecessary costs, in the form of inflexibility, long-lead times, lack of standardization and possible cancellation of a project beneficial to the customer-generator and the utility's customers.	Page 35		
Requirements: • As such, the PUC requires each utility to establish, by proposed tariff for approval by the PUC, requirements to set the parameters for standardized interconnection agreements.	Page 35	IA (Interconnection Agreement) Entire Document	Deleted:
• The standardized interconnection agreements will outline (1) the obligations of the utility relative to customer notification and communication requirements, (2) time lines for completion, (3) allowances for pre-interconnection studies and charges, (4) provision for third party interconnection studies, and (5) disconnection and reconnection requirements.	Page 36	(1)IP(Interconnection Policy) 1.2 and 3.2, (2) IP Entire document (3) 1.2 IP (4) 1.2 IP (5) 3.4 IA	Formatted: Space Before: 3 pt Deleted: .
• The standardized agreements should incorporate specific interconnection standards adopted by the Institute of Electrical and Electronic Engineers ("IEEE") or other recognized standard-setting groups and require the use of standard applications, provided by the customer-generator to the utility.	Page 36	2.1 IP reference attachment 3&4	Deleted: ¶ Formatted: Space Before: 6 pt Formatted: Space Before: 3 pt

Formatted: Tabs: 6.13", Left + Not at 7.25"

Specific Requirements	D&O 22248 Reference	Compliance Document and Site Reference	Comments
PRE-INTERCONNECTION STUDIES:			
Goals/Objectives/Concerns:			
• Interconnection of new generators to the distribution system affects system reliability. Therefore, customer-generators must coordinate generator additions with the distribution operator. The expense and time associated with these studies can make them a barrier to entry for the new customer-generator.	Page 36		
Requirements:			
• The PUC hereby requires each utility to perform pre-interconnection studies for customers at reasonable costs to the customer, and to set forth the terms and conditions of the same in a proposed tariff for approval by the PUC.	Page 36	3.3.2 IP refer attach.6 3.4.2 IP refer attach.7 3.5.3 IP refer attach.8	
• These requirements will require the utility to complete the study within a reasonable time, advise customers of its costs in advance, limit charges for redundant studies, provide the study results in writing, and provide similar features to facilitate customer interconnection.	Page 36	See above.	
• These requirements and parameters shall also: (1) allow qualified third parties to perform the studies, and require the utility to accept them under specific conditions, (2) allow third party verification of alternative solutions and technologies, (3) create safe-harbor exemption from the study requirements	Pages 36-37	3.3.1 IP 3.4.1 IP 3.5.4 IP	

Formatted: Tabs: 6.13", Left + Not at 7.25"

Specific Requirements	D&O 22248 Reference	Compliance Document and Site Reference	Comments
for small projects whose interconnection is unlikely to affect the distribution system, and (4) pre-certify certain equipment that meets certain standards set by such organizations as the UL so as to expedite installation and obviate separately conducted equipment studies.		Refer to attach. 3&4	Attachment 3 & 4 list all applicable IEEE and UL standards for fast track process.
DISTRIBUTION SYSTEM UPGRADES REQUIRED FOR INTEGRATION: Goals/Objectives/Concerns: • In some cases, the entrance of a new generator will require the utility to upgrade the distribution system, or install equipment to maintain its safety and reliability. There is a possibility that the required protective equipment already exists with the new generating facilities. Disputes therefore may arise as to whether the utility is insisting on redundant equipment. Requirements: • Accordingly, the PUC requires the utility to: (1) accept certification of distributed generation equipment, which meets standards from qualified entities such as IEEE and UL, (2) train its personnel in new technologies relating to integration equipment, and (3) where new equipment is required to facilitate interconnection, propose an allocation of costs responsibility that recognizes both the costs	Page 37 Page 37	(1) 2.1 IP refer attach. 3&4. (2) N/A (3) See Attach.2 of IA	

Deleted: ¶

Formatted: Tabs: 6.13", Left + Not at 7.25"

Specific Requirements	D&O 22248 Reference	Compliance Document and Site Reference	Comments
caused by the generator and the system benefits, if any, derived from the new equipment. • Each utility may establish detailed terms and conditions for the foregoing requirements, by proposed tariff for approval by the PUC.	Pages 37-38		
RESPONSIBILITY FOR CONTROL AND OPERATION OF DISTRIBUTED GENERATION EQUIPMENT: Goals/Objectives/Concerns: • The benefits of distributed generation to the grid may increase if the utility can dispatch the customer's units or coordinate their operation with the utility's own units. On the other hand, customers may wish to maintain control of the generation to assure sufficient power resources for themselves. Requirements: • The PUC hereby requires the utility to use its best efforts to negotiate contracts that allow the utility to dispatch the customer's generation unit where dispatching the unit is economical and feasible, and coordinate their operation with the utility's own units.	Page 38 Page 38	This will be addressed in PPA.	Individual PPA will be submitted for PUC approval
INDEMNIFICATION AND LIABILITY INSURANCE: Goals/Objectives/Concerns:			

Formatted: Tabs: 6.13", Left + Not at 7.25"

Specific Requirements	D&O 22248 Reference	Compliance Document and Site Reference	Comments
• .Generator create economic risks. Disputes may arise over whether customer-generators should have liability insurance, and in what amounts and forms it should be required. Allowing the utility to impose excessively high liability insurance requirements deters small distributed generation facilities.	Page 38		
Requirements:			
• .Accordingly, the PUC will not require distributed generators to carry a standardized amount of insurance, and hereby prohibits any utility from imposing a standardized insurance requirement for distributed generation projects.	Page 38	8.1 IA	
• The PUC allows each utility, however, to require that distributed generation customers disclose whether they intent to self-insure (and if so their means and capability of self-insuring) or if they intend to obtain an insurance policy (and, of so, in what forms and amounts), as part of the interconnection application process with the utility.	Pages 38-39	8.1 IA	
Note: By this Decision and Order, the PUC does not intend to eliminate the obligation for distributed generators to carry some form of adequate insurance, as the PUC expects distributed generation customers to have insurance in forms and amounts that are commercial reasonable in each particular situation. This approach allows a customer-generator more flexibility in providing for adequate risk management of the project	Page 39		

Formatted: Tabs: 6.13", Left + Not at 7.25"

Specific Requirements	D&O 22248 Reference	Compliance Document and Site Reference	Comments
without the burdensome and potentially overly costly standardized insurance requirements.			
UTILITY COMMUNICATION WITH CUSTOMER-GENERATORS: Goals/Objectives/Concerns: • Prospective customer-generators should not have to contend with long delays in processing their applications, confusion over which persons within the utility are responsible for which matters, and unfamiliarity within the utility over the engineering and economics of distributed generation projects. Prospective customer-generators are also entitled to have their confidential information protected. Requirements: • Therefore, the PUC requires each utility to (a) establish a centralized point of contact for distributed generation applications, (b) train certain utility employees in distributed generation matters as appropriate, and (c) maintain the confidentiality of information the customer-generator deems confidential, unless the PUC determines that disclosure is necessary to protect the public or as otherwise determine by the PUC.	Page 39 Pages 39-40	(a) See Attach.2 of IP (b) N/A (c) 4.4 IP	

Formatted: Don't keep with next, Don't keep lines together

Formatted: Space Before: 3 pt

Formatted: Space Before: 3 pt

Deleted: 5

Formatted: Tabs: 6.13", Left + Not at 7.25"

Specific Requirements	D&O 22248 Reference	Compliance Document and Site Reference	Comments
-----OTHER TARIFF REQUIREMENTS/ISSUES----			
RELIABILITY AND SAFETY: Goals/Objectives/Concerns: • An issue in this docket is whether distributed generation can be implemented in a manner that does not reduce the reliability or safety of the electric distribution system. Distributed generation differs from conventional generation because generators enter the arena without being planned or controlled automatically, by the local utility. • Despite numerous generators connected to, and injecting power into, the utility system, that system must be in balance at all times. Specifically, (a) generation and demand must be equal, (b) sufficient generation must be available to provide voltage support on the lines, (c) sufficient capacity must exist on the distribution lines to more electricity, and (d) there must be surplus generation, transmission and distribution capacity available and ready to respond to sudden changes in demand. A new load, a new generation source, or a loss of either can cause system imbalance, with results ranging from damaged computer equipment to large-scale blackouts. Prevention requires coordination between distributed generators and the utility.	Page 30 Pages 30-31		

Formatted: Keep lines together

Formatted: Keep with next, Keep lines together

Formatted: Tabs: 6.13", Left + Not at 7.25"

Specific Requirements	D&O 22248 Reference	Compliance Document and Site Reference	Comments
Requirements: • To assure safety and reliability, the PUC therefore will require the utilities to establish requirements that: (a) require, provide, and charge for all services necessary to maintain adequacy, security and stability of the distribution system, and (b) require all necessary safety equipment and operational procedures as a condition for connecting distributed generation to the system.	Page 30	(a) 3.4 attach. 5 IA (b) 3.4 Attach. 5 IA	
• The PUC, therefore, requires that each utility establish reliability and safety requirements, by proposed tariff for approval by the PUC, for distributed generation that is connected to the electric utility's distribution system. These requirements should (a) establish operating standards for voltage, power factors, frequency, and harmonic distortion, (b) require certain procedures and equipment to allow for the transfer of electric power between the system and the facility and allow parallel operation to occur. In such situations, certain limitations should apply: (1) the distributed generation unit should be required to maintain a consistent degree of power flow, stable VAR (or volt amperes reactive) supply and voltage support, (2) the distributed generation unit must be able to synchronize with the electric power system, within an acceptable degree, (3) upon disconnection from the power system, the	Pages 31-32, 46	See 2.2.1 of IA also Attach. 5 of IA. Also 1.8 of IA for VAR flow requirement. 3.4 of IA	Voltage, Power Factor, Frequency and other specific reliability issues including mode of operation will be addressed in a case by case basis on Attach 5 of the IA Disconnection issues address in

Formatted: Tabs: 6.13", Left + Not at 7.25"

Specific Requirements	D&O 22248 Reference	Compliance Document and Site Reference	Comments
distributed generation unit should be prohibited from reconnecting to the power system and re-commencing operation until the utility has verified that the unit can reestablish full voltage and power support to the distribution system and operate in a stable manner for a specific time period to be established by the utility.			Interconnection Agreement.
• Further, the guidelines should establish control and monitoring requirements for the distributed generation unit to coordinate the operations with the utility, as well as: (1) allow for automatic control and quick shutdown, (2) meet metering, telemetry and communications requirements capable to supplying failure reporting data on generation operation, and (3) meet minimum documentation and test result criteria.	Page 32	(1,2 &3) 1.7 IA	
• In addition, the interconnection of distributed generation should not result in an unacceptable increase in the risk of electrocution or fire. The PUC hereby requires that each utility establish technical requirements, by proposed tariff for approval by the PUC, to ensure distribution system safety that: (a) require any distributed generation unit to have a positive disconnect that automatically isolates it from the distribution system when there is a fault, (b) require that when there is a fault, the distributed generation unit may not reconnect to the distribution	Pages 32-33	1.5.4 and 1.5.5 of IA	

Formatted: Tabs: 6.13", Left + Not at 7.25"

Specific Requirements	D&O 22248 Reference	Compliance Document and Site Reference	Comments
system until the fault is cleared, (c) require all interconnected distributed generation to have a utility-accessible manual disconnect switch, (d) require all distributed generators to comply with national, state, and local standards and electrical codes and safety practices, (e) require the generator to follow the utility's safety procedures for ensuring that switching devices do not operate unless and until appropriate preconditions are met and verified, and (f) require the distributed generation unit to have protective devices such as over current protection, circuits with reclosing schemes, inverters, synchronizing schemes and islanding abilities.			
COST ALLOCATION AND RATE DESIGN: Goals/Objectives/Concerns: • To build and operate a distributed generation project, costs must be incurred by both the customer-generator and the utility. The customer-generator will incur the up-front capital costs for construction and installation, as well as ongoing operating costs such as fuel and maintenance. The utility have to incur costs to accommodate the customer-generator. The utility-incurred costs include: (a) costs to complete interconnection and pre-interconnection studies, (b) costs incurred to acquire and operate generation, transmission, or distribution facilities	Page 40		

Formatted: Tabs: 6.13", Left + Not at 7.25"

Specific Requirements	D&O 22248 Reference	Compliance Document and Site Reference	Comments
necessary to provide electric service to the customer-generator (i.e., distribution system costs), (c) costs of utility system facilities, built on the expectation that the customer's load will be there, which would be rendered unrecoverable if the customer-generator reduces its purchases in favor of the customers' own generation (i.e., unrecovered costs).			
• Requirements:			
• To ensure that only economic distributed generation projects are developed, and that there is no cost shifting from the customer-generator to other customers or to utility shareholders, the PUC finds that utility-incurred costs must be allocated properly so that those costs that benefit the distributed generation project are borne by the project.	Pages 40, 47		
• This principle applies to interconnection costs, standby and backup service costs, and unrecovered utility costs. In that connection, the following requirements are imposed:	Pages 41, 47		
1. Interconnection Costs: The PUC requires that each utility require the interconnecting carrier to pay for all costs of interconnecting, including the costs of system upgrades or network upgrades; however, if the interconnecting customer or generator can show that there are benefits to the utility system for such upgrades, it may apply to	Page 41	4.1 IA Attach. 6 of IA	

Formatted: Tabs: 6.13", Left + Not at 7.25"

Specific Requirements	D&O 22248 Reference	Compliance Document and Site Reference	Comments
the utility for a credit reflecting these benefits, subject to PUC approval. 2. Standby and Backup Service Costs: The PUC requires each utility to establish, by proposed tariff for PUC approval, standby rates based on unbundled costs associated with providing such service (i.e., generation, distribution, transmission and ancillary services). The unbundled rates should represent, identify, and quantify the costs of providing standby services to distributed generation customers, with the costs based on each utility's latest recorded results for the most recently completed fiscal year, or other means acceptable to the PUC. 3. "Unrecovered" Costs. • The PUC finds that standby fees must be set at a level allowing the utility to recover the costs incurred by the electric utility that are reasonably apportioned to the customer-generator. A carefully constructed standby charge will prevent uneconomic bypass, because an economically rational customer will not make the investment unless the sum of the investment, the operating costs, and the standby charge are exceeded by the savings on the customer's bill resulting from the investment (plus any revenues the customer	Page 42 Page 43		Note: To be addressed in KIUC's forthcoming standby service tariff (proposed).

Formatted: Tabs: 6.13", Left + Not at 7.25"

Specific Requirements	D&O 22248 Reference	Compliance Document and Site Reference	Comments
might earn from permissible sales back to the grid). • As part of the PUC's review and approval of the standby rates, the PUC will also consider whether there is a benefit to deferring the assignment of any unrecovered costs until a certain percentage of load has been lost to distributed generation applications. In doing so, the PUC will encourage deployment of beneficial and economic distributed generation while providing protection to the utility. Once the percentage is reached, the PUC can appropriately allocate the charges for unrecovered costs to those whose new generation rendered these costs unrecoverable. Note: To the extent that the net metering provision HRS §269-102(b) applies, any requirements established or approved by the PUC with respect to interconnection charges, standby rates and charges shall not apply to net-metering facilities pursuant to HRS §269-102(b).	Pages 43-44		

CERTIFICATE OF SERVICE

I (we) hereby certify that copies of the foregoing document were duly served on the following parties, by having said copies delivered as set forth below:

DIVISION OF CONSUMER ADVOCACY 335 Merchant Street Room 326 Honolulu, HI 96813	3 copies Hand Delivery
THOMAS W. WILLIAMS, JR., ESQ. PETER Y. KIKUTA, ESQ. Goodsill, Anderson, Quinn & Stifel Alii Place, Suite 1800 1099 Alakea Street Honolulu, Hawaii 96813	1 copy U.S. Mail
MR. WILLIAM A. BONNET Vice President Hawaiian Electric Company, Inc. Hawaii Electric Light Company, Inc. Maui Electric Company, Limited P. O. Box 2750 Honolulu, Hawaii 96840-0001	1 copy U.S. Mail
MR. DEAN MATSUURA Director, Regulatory Affairs Hawaiian Electric Company, Inc. P. O. Box 2750 Honolulu, Hawaii 96840-0001	1 copy U.S. Mail
MR. H.A. DUTCH ACHENBACH, President & CEO MR. JOSEPH McCAWLEY, Manager, Regulatory & Legislative Affairs Kauai Island Utility Cooperative 4463 Pahe'e Street Lihue, Hawaii 96766	1 copy U.S. Mail
BRIAN T. MOTO, ESQ. Corporation Counsel County of Maui Department of the Corporation Counsel 200 S. High Street Wailuku, HI 96793	1 copy U.S. Mail

CINDY Y. YOUNG, ESQ. Deputy Corporation Counsel County of Maui Department of the Corporation Counsel 200 S. High Street Wailuku, HI 96793	1 copy U.S. Mail
MR. KALVIN K. KOBAYASHI Energy Coordinator County of Maui Department of Management 200 S. High Street Wailuku, HI 96793	1 copy U.S. Mail
MR. WARREN S. BOLLMEIER II President Hawaii Renewable Energy Alliance 46-040 Konane Place, #3816 Kaneohe, Hawaii 96744	1 copy U.S. Mail
MR. JOHN CROUCH Box 38-4276 Waikoloa, HI 96738	1 copy U.S. Mail
MR. RICK REED Inter Island Solar Supply 761 Ahua Street Honolulu, HI 96819	1 copy U.S. Mail
MR. HENRY CURTIS Vice President for Consumer Issues Life of the Land 76 North King Street, Suite 203 Honolulu, HI 96817	3 copies U.S. Mail
SANDRA –ANN Y. H. WONG, ESQ. 1050 Bishop Street, #514 Honolulu, Hawaii 96813	1 copy U.S. Mail
CHRISTOPHER S. COLMAN, ESQ. Deputy General Counsel Amerada Hess Corporation One Hess Plaza Woodbridge, N.J. 07095	1 copy U.S. Mail
MR. MICHAEL DE'MARSI Hess Microgen 4101 Halburton Road Raleigh, NC 27614	1 copy U.S. Mail

LANI D. H. NAKAZAWA, ESQ. Office of the County Attorney County of Kauai 4444 Rice Street, Suite 220 Lihue, HI 96766	2 copies U.S. Mail
MR. GLENN SATO Energy Coordinator c/o Office of the County Attorney County of Kauai 4444 Rice Street, Suite 220 Lihue, HI 96766	1 copy U.S. Mail
JOHN W. K. CHANG, ESQ. Deputy Attorney General Department of the Attorney General State of Hawaii 425 Queen Street Honolulu, Hawaii 96813	1 copy U.S. Mail

DATED: Honolulu, Hawai`i, October 10, 2006.

KENT D. MORIHARA
MICHAEL H. LAU

Attorneys for KAUAI ISLAND UTILITY COOPERATIVE